

# Unseasonably Warm Air for This Week

Unseasonably warm air will move off the Rocky Mountains and into the Northern Plains today. During winter, a method for forecasting highs is to compare the temperature of an airmass at two levels, roughly between 1000 and 3000 feet over the eastern half of South Dakota. How effectively this air mixes to the surface depends on wind speed & direction, as well as the amount of sunshine, and the depth of snow cover. This week, the region will see conditions complementary for mixing warmer air to the surface, with a favorable wind direction, a decent amount of sun, and a complete lack of snow cover. Also of significance, record temperatures for this time of year are not particularly warm.

Figures 1 & 2 below represent temperatures (Celsius) at 1000ft and 3000ft respectively. The color code is a scale that depicts the deviation from climatology at these levels, where between 1 and 2 (yellow) represents temperatures above normal, with a deviation of 2 to 3 (orange) well above normal. Air at these levels will start abnormally warm, dropping only a few degrees through the course of the evening into Wednesday (Figures 3-6). A second, much warmer surge of air will move into the region Thursday, and depart on Friday (Figures 6-9).

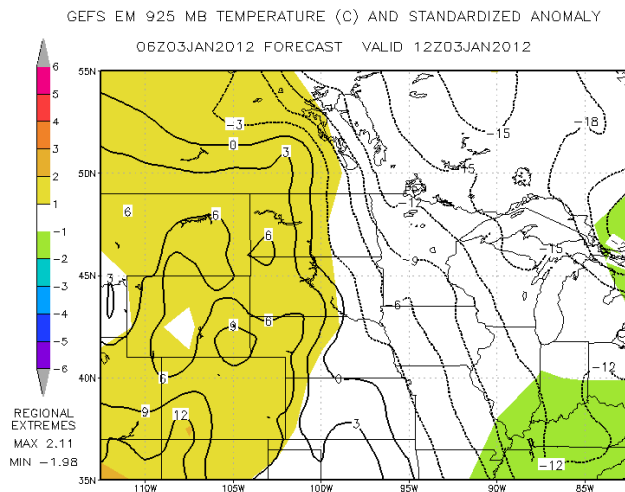


Figure 1 925mb temperatures (Celsius) and thermal anomaly scale at 6am Tuesday. 925mb temperature range is forecast between 3 and 6 degrees Celsius.

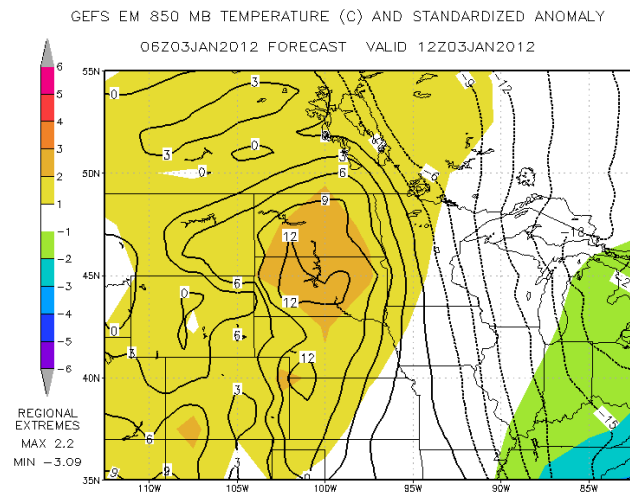


Figure 2 850mb temperatures (Celsius) and thermal anomaly scale at 6am Tuesday. 850mb temperature range is forecast between 9 and 14 degrees Celsius.

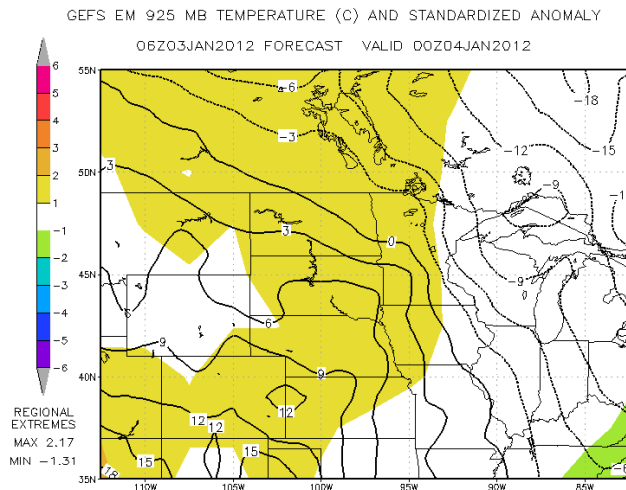


Figure 3 925mb temperatures (Celsius) and thermal anomaly scale at 6pm Tuesday. 925mb temperature range is forecast to increase to between 5 and 9 degrees Celsius, an artifact of surface heating into this layer during the day.

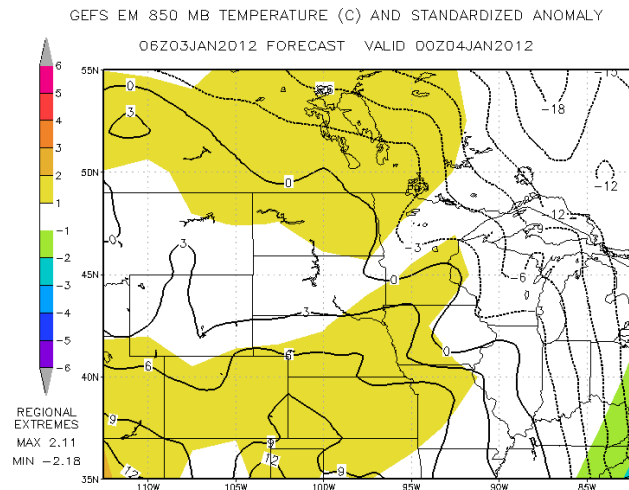


Figure 4 850mb temperatures (Celsius) and thermal anomaly scale at 6pm Tuesday. 850mb temperature range has fallen to between 2 and 4 degrees Celsius.

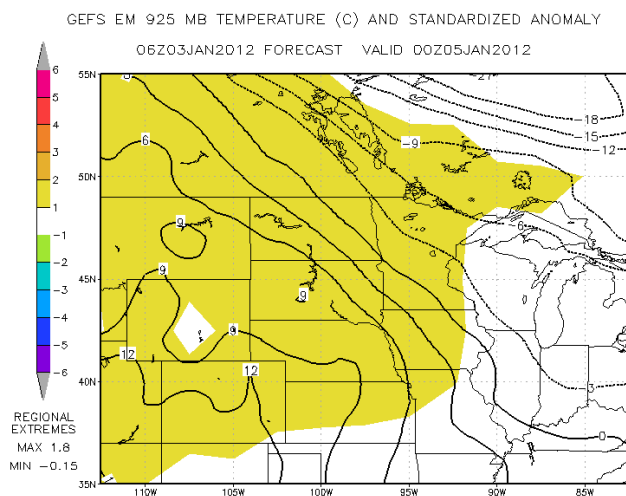


Figure 5 925mb temperatures (Celsius) and thermal anomaly scale at 6pm Wednesday. 925mb temperature range is forecast between 5 and 10 degrees Celsius.

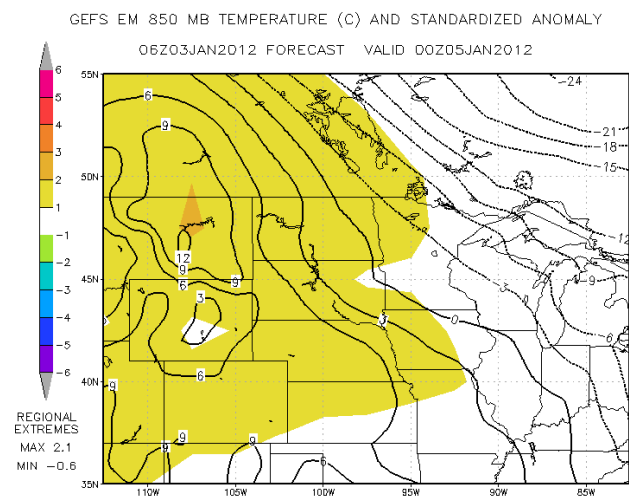


Figure 6 850mb temperatures (Celsius) and thermal anomaly scale at 6pm Wednesday. 850mb temperature range remains between 2 and 4 degrees Celsius.

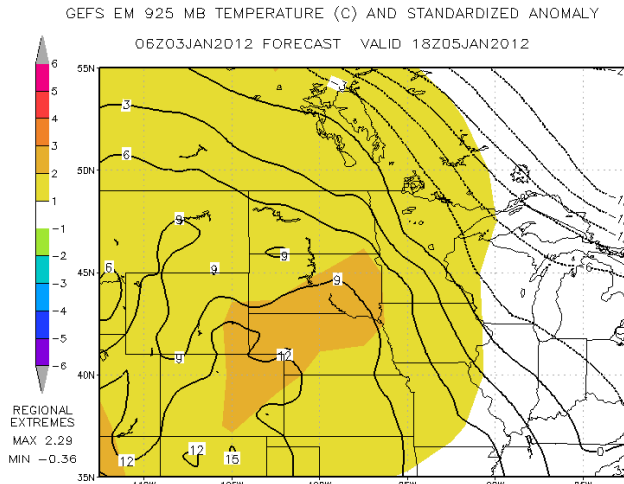


Figure 6 925mb temperatures (Celsius) and thermal anomaly scale at noon Thursday. 925mb temperature range has peaked at 8 to 13 degrees Celsius, equivalent to 46 and 55 degrees Fahrenheit respectively.

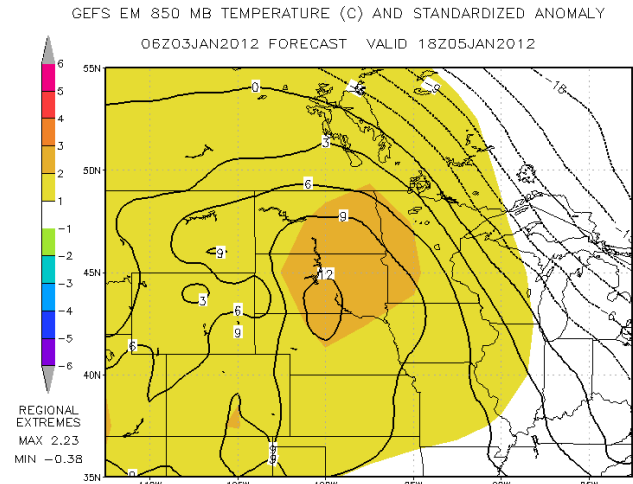


Figure 7 850mb temperatures (Celsius) and thermal anomaly scale at noon Thursday. 850mb temperature has peaked at 13 degrees Celsius.

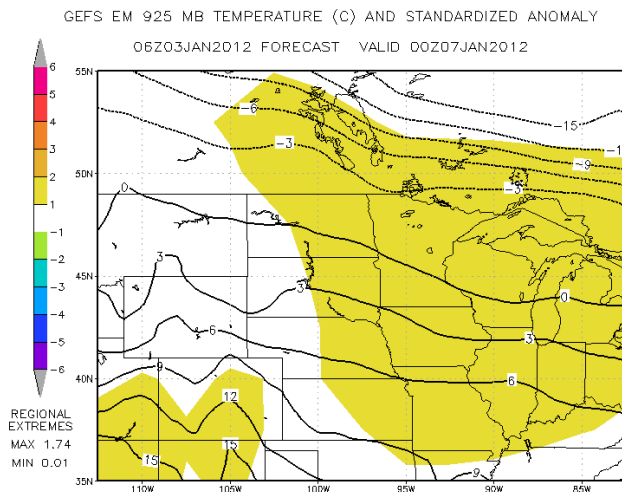


Figure 8 925mb temperatures (Celsius) and thermal anomaly scale at 6pm Friday. 925mb temperature range has cooled down to between 1 and 3 degrees Celsius, which still above average for this time.

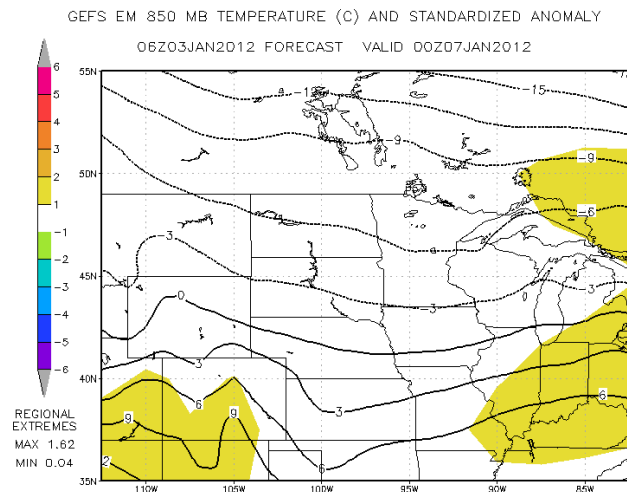


Figure 9 850mb temperatures (Celsius) and thermal anomaly scale at 6pm Friday. 850mb temperature falls through the day, starting around 0 degrees Celsius, but dropping to -4 Celsius by the afternoon.

The very warm air will persist through Friday, with the potential to break several regional records. Below is a list of records Tuesday through Friday, the normal for this time of year, as well as the all time records for January:

<b>Date:</b>	<b>Aberdeen</b>	<b>Sisseton</b>	<b>Wheaton</b>	<b>Watertown</b>
<b>Tuesday, Jan 03</b>	<b>51</b>	<b>47</b>	<b>43</b>	<b>45</b>
<b>Wednesday, Jan 04</b>	<b>47</b>	<b>47</b>	<b>48</b>	<b>45</b>
<b>Thursday, Jan 05</b>	<b>46</b>	<b>47</b>	<b>43</b>	<b>43</b>
<b>Friday, Jan 06</b>	<b>47</b>	<b>48</b>	<b>45</b>	<b>43</b>
<b>Highest January Temperature Recorded</b>	<b>60</b>	<b>65</b>	<b>61</b>	<b>65</b>
<b>Average High Temperature January 3 - 6</b>	<b>22</b>	<b>23</b>	<b>19</b>	<b>22</b>

<b>Date:</b>	<b>Pierre</b>	<b>Kennebec</b>	<b>Mobridge</b>	<b>Timber Lake</b>
<b>Tuesday, Jan 03</b>	<b>62</b>	<b>66</b>	<b>57</b>	<b>59</b>
<b>Wednesday, Jan 04</b>	<b>60</b>	<b>65</b>	<b>46</b>	<b>48</b>
<b>Thursday, Jan 05</b>	<b>54</b>	<b>56</b>	<b>49</b>	<b>50</b>
<b>Friday, Jan 06</b>	<b>52</b>	<b>65</b>	<b>54</b>	<b>54</b>
<b>Highest January Temperature Recorded</b>	<b>68</b>	<b>70</b>	<b>64</b>	<b>68</b>
<b>Average High Temperature January 3 - 6</b>	<b>29</b>	<b>31</b>	<b>25</b>	<b>28</b>